

Policy Issue #3 Defining the Cost Tests

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Recommendation: The NCA Roundtable sub-committee on Refining Cost Tests recommends that the primary cost test to be used in examining alternatives to transmission construction should be the Regional Cost Test, a PNW variant on the Total Resource Cost test used in many national jurisdictions.

For purposes of examining the ramifications of considering the Transmission Business Line as a stand-alone entity, the sub-committee believes that the Utility Cost Test provides insights. Further, according to the Roundtable meeting notes from July, the Roundtable membership also spoke of considering the extent of lost transmission revenues to be of general interest, but not as a decision factor.

Perspective: Cost tests, as variously defined and calculated, provide information to decision makers. Each test contains some information that is of interest. They do not, in and of themselves, determine the decision. Policy makers may, however, determine which tests are to be considered more relevant than others for decisions – i.e., which information is more useful.

This is necessary for three reasons: (1) economic tests themselves don't determine policy choices, they are but one input; (2) even the most detailed tests can't monetize all benefits and costs¹; and (3) the wider the scope of costs and benefits that go into a test, the less certain each marginal input becomes². The best that tests, such as those discussed below, can do is to provide information on the major economic elements that are important to policy makers.

One over-arching benefit to deferring new transmission construction that could be included in any policy decision is the value of keeping open the option to avoid building transmission, if after deferring it, the future loads do not remain or develop as forecast.

Background: Bonneville Power Administration is a single public agency established to provide reliable transmission and power supplies to the Region at cost. In order to provide non-discriminatory access to transmission, BPA has created two "virtual" main business lines and operates them under FERC Standards of Conduct (SOC). Nevertheless, BPA has a unified public purpose. However, within the same agency different cost tests have been historically used for major decisions.

The Power Business Line (PBL) uses a Regional Cost Test³ for power resource acquisition⁴ and the Transmission Business Line (TBL) uses a "revenue needs test."

¹ Most tests can't value the potential for stranded investments, the risk reduction afforded by redundancy, or the political importance of providing all utilities with the sense that they are important.

² Not only are health benefits hard to fully understand, but also every solution can have compounding effects. For example, LED lights may dramatically reduce power plant emissions, but they contain extremely dangerous materials such as heavy metals and gallium arsenide.

³ Although the PBL uses a regional cost test to determine what resources should be acquired, it also maximizes the utility benefit by sharing the cost of the energy efficiency resource with consumers. It is a UCT as a "willingness to

For the Kangley-Echo Lake analysis TBL used a Rate Impact Measure test⁵, but generally has agreed not to consider BPA lost revenues⁶, which are part of a RIM test, in future planning⁷.

Economic Tests:

The scope of the costs and benefits -- how wide we cast the net -- is the distinguishing characteristic of the various tests. Costs and benefits from whose perspective? It can be as narrow as a participant test – what’s in it for them? – or as broad as society as a whole. The traditional cutting points have been the participant test, the non-participant test (RIM test or No-losers test), the utility cost test, the total resource cost, the regional cost test, societal test, and the public purposes test⁸. Each test considers different costs and different benefits. And different analysts can define each test differently. Before defining or operationalizing what the tests would look like, we eliminated some tests from consideration. For a transmission project decision, looking at the participant test may be too narrow, and most of the relevant parts of the public purposes test are already included in a societal test, so we dropped those.

This leaves several tests for public decision-making.

The **RIM test** is based on seeking the solution to a problem that minimizes the impact on the rates paid by the transmission customers (the “no-losers test”). It is sometimes called the “no-winners” test, because it seldom encourages anything other than new construction, the baseline approach, to be done.

- All solutions to transmission congestion or reliability issues will cost something. The test involves a comparison of eventual rates if the solution is to build more transmission. vs. what the rates would be if the problem is mitigated by some alternative.⁹
- The RIM test considers that there will be transmission revenues from the use of the new line that will eventually re-coup its cost, but that many alternatives will result in reduced transmission revenues which will increase the rates as revenue needs are spread over a smaller volume of traffic.
- It is possible to run a RIM test to see how one alternative to improving the system reliability compares to another, but if lost revenue impacts are not considered, as is the current direction of TBL, the test defaults to a Utility Cost Test.

pay.” Deciding what to do on a regional cost basis and deciding to get it at the lowest cost are two, non-contradictory decisions.

⁴ Although this test is very similar to the TRC (Total Resource Cost test), the NWEPPCA of 1980, and the NW Power and Conservation Council acting under the direction of the Act, do not use that terminology for regional planning.

⁵ According to BPA’s contractor, Energy and Environmental Economics (E3).

⁶ There is another subcommittee of the NCA Roundtable looking at this issue for BPA and its retail utilities.

⁷ The E3 Tool Kit is permeated with lost revenue impacts and a RIM test focus.

⁸ Defined in CA in CPUC D 98-08-024. It considers equity issues as well as energy and environmental issues.

⁹ In the draft final report of the New England Demand Response Initiative (NEDRI), footnote 193: “It would make absolutely no sense to apply the test to D(emand) R(eduction) investments that defer distribution upgrades if it were not also applied to the upgrade itself. NEDRI is unaware of a utility or a commission that has ever applied the RIM test to proposed distribution upgrades needed for local reliability.”

What the California Manual of Standard Practice calls the **Utility Cost Test** is closest to what TBL currently considers. An alternative name is “revenue requirement test:” defined as: which combination of measures will add the least to the long-term revenue requirements of the utility, even if we don’t consider any lost revenue impacts?

- Costs include any costs directly borne by the utility, which can include construction, study, environmental mitigation, consumer incentives, equipment, and administrative costs among others.
- Because transmission losses are pass-through costs from the generator to the end-users, the UCT would not show a benefit from the reduced line losses that result from construction of additional transmission capacity.
- The benefits are limited to the forecast deferral of transmission upgrades or construction – because the benefit of avoiding a reliability problem is already a given under any solution.
- This view sees the “utility” system (TBL) as an isolated business in a larger world.
- This view focuses on utility system costs based on the proposition that utility costs are ultimately ratepayer costs, and ratepayer costs are the appropriate basis for comparison of alternative measures

Are there tests that better capture all the costs and benefits for the PNW that can come from a decision on whether to build or defer transmission?

A **TRC test** looks at all the benefits and all the costs within the scope of the jurisdiction. In the PNW region, we usually refer to this as the “regional cost” test as parsed out by the Power Planning and Conservation Council. It is fairly inclusive.

- It is a particularly persuasive choice for policy makers who consider BPA to be a single entity, because, whereas the UCT views TBL as an isolated business, the TRC would treat power and transmission as part of the same regional equation.
- Even if the test is limited to energy and T&D benefits in the analysis, it is a very important step up from the UCT, because it should add a value for the avoided energy generation for the energy efficiency fraction of an alternative to transmission¹⁰.
- This test also credits new transmission construction with energy benefits from the reduction in line losses due to relative unloading of all related lines at all times of the year.

The Sub-committee has identified the **regional cost test** as defined in the 1983 Power Plan as a most appropriate version of the **TRC test** for purposes of this Roundtable discussion. . Its scope is larger than the TRC in that it considers the three points listed above on the TRC, but also considers aspects that are designed to reflect the intent of Congress and the concept of the PNW as a unified region. Some of the key operational elements include:

¹⁰ This illustrates one fairly important oversight in the “Distributed Energy Resources: Screening Process and Tools,” by Energy and Environmental Economics, Inc, July 2003. In the tests presented it clearly states that the TRC is simply based on the addition of the RIM and the participant cost test (costs and benefits), when neither of those tests value the energy generation avoided (p. 5).

- It is an “avoided cost” metric, in that it establishes a baseline against which the benefits of alternatives are considered. In this case the baseline costs are assumed to be the regional cost of building a transmission line.
- The costs of building will include monetized environmental negotiation and mitigation costs.
- The costs of alternatives include the full installed cost of EE, DG, and DR measures and the operational, administrative, marketing and fuel costs (of DG). Incentive payments to end users are considered transfer payments.
- The benefits included in all alternatives would be all avoided generation costs (energy and demand), including avoided losses from transmitting and distributing those resources when applicable, as well as the value of deferred or avoided T&D improvements.
- The regional cost test does include the potential for environmental benefits of reduced generation, or similar costs due to increased DG, either through being monetized or by policy decisions.
- In the regional cost test, conservation is given a 10% advantage by law over generating alternatives. In a TRC analog for transmission, the 10% credit by law would only apply to the fraction of the alternative that was provided by energy efficiency, and then only on the central station avoided generation benefit.
- Other non-electrical resource savings are also benefits, like water and natural gas.

Many parties have considered the regional cost test to be a **Societal** test. In fact, most definitions of a societal test go even beyond the regional cost test. This sub-committee recognizes the more generic and less precise values that could be included in the regional cost test, but would prefer to keep them out-side the scope of the recommended economic test. These can be discussed as part a broader societal test.

The ***Societal cost*** test looks at a vast array of energy and non-energy benefits and costs, many of which can only be subjectively and/or arbitrarily monetized¹¹. Only related to energy efficiency does the nation have a lot of experience in trying to monetize and consider many of the relevant factors.

- There is a whole literature on non-energy benefits, which can range from simple things like water savings to complex issues of cost savings due to reduced arrearages in low-income programs.
- Reduced emissions from generation have often been the focus of study in societal tests, but it doesn’t have the same value for Demand Response and Distributed Generation as it does for energy efficiency.
- It could include the non-monetized, non-energy benefits of some of the alternative activities such as the increased reliability of a consumer’s facility with distributed generation, the productivity improvements that come from energy efficiency improvements, or the improved facility controls due to integration with distributed generation.
- Slowing global warming would be a societal benefit.

¹¹ The E3 consultant tool-kit simplifies the Societal Cost Test for heuristic purposes by simply adding a life-cycle “environmental adder” of \$6.05 per MWh benefit (p. 27).

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- Aesthetics, access to wilderness, avian mortality, etc. are even more difficult to assess, but are part of broader tests.

The detail in operationalizing any Cost Test is beyond the scope of what this sub-committee can propose, but the recommendation on the appropriate scope and scale of the test to be used is an important step. As a committee, we are recommending the ***Regional Cost Test*** as being the most appropriate and useful.

Disclaimer for the Policy 3 Cost Test paper

The sub-committee paper recommends that the primary cost test should be the Regional Cost Test (RCT), a variant on the Total Resources Cost test used in many national jurisdictions for resource planning. Current practice for the few utilities evaluating non construction alternatives to transmission is to apply the (Transmission) Utility Cost Test (some use the Rate Impact Measure) to determine what costs can be included in transmission rates. BPA proposes to examine both the RCT and UCT because of the different perspective that each provides to the decision maker.